## **Appendix E: Non-EGU Point and Area Source Control Measure Summary**

The data in this table of non-EGU point and area source control measures for direct PM and PM precursor emissions comes from Appendix B of the AirControlNET 4.1 control measures documentation report prepared in May 2006. The detailed information found in AirControlNET for each of these control measures can be found in this same report. This detailed information also includes any assumptions, caveats, and limitations associated with the information and is presented in a "at-a-glance" table that is available for each control measure in AirControlNET. All of this information represents the best and most complete data that EPA has for each of these control measures at this time and will be revised and updated by EPA as appropriate.

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{10}$ EC OC  $NO_x$ VOC  $S0_2$ Hg Source Category Control Measure Name  $PM_{2.5}$  $NH_3$ CO Low Typical High Low Typical High Cattle Feedlots Chemical Additives to V 228 Waste **Hog Operations** Chemical Additives to √\* 50% 73 Waste **Poultry Operations** Chemical Additives to √\* 75% 1,014 Waste Seasonal Ban (Ozone √\* 100% Agricultural Burning N/A Season Daily) √\* Ammonia-Natural Gas-Oxygen Trim + Water 65% 680 Fired Reformers—Small Injection Sources Ammonia-Natural Gas-Selective Non-Catalytic √\* Χ 50% 2,900 3,870 3,870 Fired Reformers—Small Reduction (SNCR) Sources Ammonia-Natural Gas-Selective Catalytic √\* Χ 80% 2,230 2,230 2,860 Fired Reformers—Small Reduction (SCR) Sources Ammonia-Natural Gas-Low NOx Burner √\* 50% 820 Fired Reformers—Small Sources Ammonia—Natural Gas— Low NOx Burner (LNB) + √\* 2,470 2,560 2,560 60% Fired Reformers—Small Flue Gas Recirculation Sources (FGR) Ammonia Products: Low NOx Burner + Flue √\* 60% 2.470 2,560 2,560 Feedstock Desulfurization-Gas Recirculation Small Sources Asphaltic Cone; Rotary √\* Low NOx Burner 50% 2,200 Dryer; Conv Plant—Small Sources **Bv-Product Coke** √\* Selective Non-Catalytic Х 60% 1.640 Manufacturing: Oven Reduction (SNCR) Underfiring √\* Cement Kilns Biosolid Injection 23% 310 Cement Manufacturing-Mid-Kiln Firing √\* 25% -460 55 730 Dry Cement Manufacturing-Selective Non-Catalytic √\* Χ 50% 770 Reduction (SNCR) Úrea Dry Based

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ EC VOC  $S0_2$ Source Category Control Measure Name  $PM_{10}$ OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High Cement Manufacturing-Selective Catalytic √\* Χ 80% 3,370 Dry Reduction (SCR) Cement Manufacturing-Selective Non-Catalytic √\* Χ 50% 850 Reduction (SNCR) Ammonia Based √\* Cement Manufacturing-Low NOx Burner 25% 300 440 620 Dry √\* Cement Manufacturing-Mid-Kiln Firing 25% -460 730 55 Wet √\* 25% Cement Manufacturing-Low NOx Burner 300 440 620 Wet Cement Manufacturing-Selective Catalytic √\* Χ 80% 2,880 Wet-Large Sources Reduction (SCR) Cement Manufacturing-Selective Catalytic √\* Х 80% 2.880 Wet-Small Sources Reduction (SCR) Ceramic Clay Low NOx Burner √\* 50% 2,200 Manufacturing; Drying-Small Sources √\* Coal Cleaning-Thrml Dryer; Low NOx Burner 50% 1.460 Fluidized Bed—Small Sources √\* Combustion Turbines—Jet Selective Catalytic 90% 2,300 Fuel—Small Sources Reduction (SCR) + Water Injection √\* Combustion Turbines—Jet Water Injection 68% 1,290 Fuel—Small Sources Combustion Turbines— Dry Low NOx Combustors √\* 50% 100 140 100 Natural Gas-Large Sources √\* Combustion Turbines-Selective Catalytic 95% 2,730 Reduction (SCR) + Water Natural Gas—Small Injection Sources Combustion Turbines-Selective Catalytic √\* Х 95% 2.010 2.010 8.960 Natural Gas—Small Reduction (SCR) + Steam Sources Injection Combustion Turbines— Steam Injection √\* 80% 1,040 Natural Gas—Small Sources

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant 1999 dollars) (% reduction) EC VOC  $S0_2$ Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High Combustion Turbines-Water Injection √\* 76% 1,510 Natural Gas—Small Sources Combustion Turbines— Selective Catalytic √\* Х 2,570 19,12 94% 2,570 Reduction (SCR) + Low Natural Gas—Small 0 NOx Burner (LNB) Sources Combustion Turbines-Dry Low NOx Combustors √\* 84% 490 540 490 Natural Gas-Small Sources Combustion Turbines— Selective Catalytic √\* 90% 2,300 Reduction (SCR) + Water Oil—Small Sources Injection √\* Combustion Turbines-Water Injection 68% 1,290 Oil—Small Sources Commercial/Institutional-√\* 7% Water Heater N/A Natural Gas Replacement Commercial/Institutional-Water Heaters + LNB √\* 7% 1.230 Natural Gas Space Heaters Commercial/Institutional Selective Non-Catalytic √\* Χ 45% 1,130 Incinerators Reduction (SNCR) Conv Coating of Prod; Acid √\* Low NOx Burner 50% 2,200 Cleaning Bath—Small Sources Fiberglass Manufacture; Low NOx Burner √\* 40% 1,690 Textile-Type; Recuperative Furnaces √\* Fluid Catalytic Cracking Low NOx Burner + Flue 1,430 3,190 55% 3,190 Units—Small Sources Gas Recirculation Fuel Fired Equipment— Low NOx Burner + Flue √\* 50% 570 Process Heaters Gas Recirculation √\* Fuel Fired Equipment; Low NOx Burner 50% 570 Furnaces; Natural Gas Glass Manufacturing-OXY-Firing √\* 85% 4.590 Containers Glass Manufacturing-Electric Boost √\* 10% 7,150 Containers Glass Manufacturing-**Gullet Preheat** √\* 25% 940 Containers

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ VOC Source Category Control Measure Name  $PM_{10}$ EC OC  $NO_x$  $S0_2$  $NH_3$ CO Hg Low Typical High Low Typical High Glass Manufacturing-Low NOx Burner √\* 40% 1,690 Containers Glass Manufacturing-Selective Non-Catalytic √\* Х 40% 1,770 Reduction (SNCR) Containers Glass Manufacturing-Selective Catalytic √\* Χ 75% 2.200 Containers Reduction (SCR) OXY-Firing √\* 85% Glass Manufacturing—Flat 1,900 √\* Glass Manufacturing—Flat Low NOx Burner 40% 700 √\* 10% 2,320 Glass Manufacturing—Flat Electric Boost √\* 75% Glass Manufacturing-Selective Catalytic Χ 710 Flat—Large Sources Reduction (SCR) Selective Non-Catalytic √\* Glass Manufacturing— Χ 40% 740 Flat—Large Sources Reduction (SNCR) Glass Manufacturing-Selective Catalytic √\* Χ 75% 710 Flat—Small Sources Reduction (SCR) √\* Glass Manufacturing-Selective Non-Catalytic Х 40% 740 Flat—Small Sources Reduction (SNCR) Glass Manufacturing-**Gullet Preheat** √\* 25% 810 Pressed √\* Glass Manufacturing-Low NOx Burner 40% 1,500 Pressed √\* Glass Manufacturing-Selective Non-Catalytic Χ 40% 1,640 Reduction (SNCR) Pressed √\* Glass Manufacturing-Selective Catalytic Χ 75% 2,530 Reduction (SCR) Pressed Glass Manufacturing-**OXY-Firing** √\* 85% 3,900 Pressed Glass Manufacturing-√\* Electric Boost 10% 8.760 Pressed 1C Engines—Gas L-E (Low Speed) √\* 87% 176 1C Engines—Gas—Small Selective Catalytic √\* 90% 2,769 Reduction (SCR) Sources Selective Catalytic √\* 80% 2,340 1C Engines-Gas, Diesel, LPG—Small Sources Reduction (SCR) √\* 1C Engines-Gas, Diesel, Ignition Retard 25% 770 LPG—Small Sources

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Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ VOC  $S0_2$ Source Category Control Measure Name  $PM_{10}$ EC OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High ICI Boilers-Coal/Cyclone-Coal Reburn √\* 50% 300 Large Sources ICI Boilers-Coal/Cyclone-Selective Catalytic √\* 80% 820 Small Sources Reduction (SCR) ICI Boilers-Coal/Cyclone-Natural Gas Reburn √\* 55% 1,570 **Small Sources** (NGR) ICI Boilers—Coal/Cyclone— Selective Non-Catalytic √\* Χ 35% 840 Small Sources Reduction (SNCR) √\* ICI Boilers-Coal/Cyclone-Coal Reburn 50% 1,570 Small Sources √\* ICI Boilers-Coal/FBC-Selective Non-Catalytic Χ 40% 670 Reduction (SNCR) Úrea Large Sources Based ICI Boilers-Coal/FBC-Selective Non-Catalytic √\* Х 75% 900 Small Sources Reduction (SNCR) Úrea Based ICI Boilers-Coal/Stoker-Selective Non-Catalytic √\* Χ 40% 873 1,015 1,015 Small Sources Reduction (SNCR) ICI Boilers-Coal/Stoker-Selective Non-Catalytic √\* Χ 40% 817 **Small Sources** Reduction (SNCR) ICI Boilers-Coal/Wall-Low NOx Burner √\* 50% 1,090 Large Sources ICI Boilers-Coal/Wall-√\* Selective Catalytic Х 70% 1,070 Large Sources Reduction (SCR) ICI Boilers-Coal/Wall-Selective Non-Catalytic √\* Χ 40% 840 Large Sources Reduction (SNCR) ICI Boilers-Coal/Wall-Selective Catalytic √\* 70% 1,260 Small Sources Reduction (SCR) ICI Boilers-Coal/Wall-Selective Non-Catalytic √\* 40% 400 Х 1.040 1.040 Small Sources Reduction (SNCR) ICI Boilers-Coal/Wall-Low NOx Burner √\* 50% 1.460 Small Sources ICI Boilers—Coke—Small Selective Non-Catalytic √\* Χ 40% 400 1,040 1,040 Reduction (SNCR) Sources √\* ICI Boilers—Coke—Small Low NOx Burner 50% 1,460 Sources √\* ICI Boilers—Coke—Small Selective Catalytic Χ 70% 1,260 Reduction (SCR) Sources

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars) VOC Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ EC OC  $NO_x$  $S0_2$  $NH_3$ CO Hq Low Typical High Low Typical High ICI Boilers-Distillate Oil-Selective Non-Catalytic √\* Χ 50% 1,890 Large Sources Reduction (SNCR) ICI Boilers-Distillate Oil-Low NOx Burner √\* 50% 1,180 Small Sources ICI Boilers-Distillate Oil-Low NOx Burner + Flue √\* 60% 1.090 2.490 2.490 **Small Sources** Gas Recirculation ICI Boilers-Distillate Oil-Selective Catalytic √\* Χ 80% 2,780 2,780 3,570 Small Sources Reduction (SCR) √\* ICI Boilers-Distillate Oil-Selective Non-Catalytic Χ 50% 3,470 4,640 4,640 Small Sources Reduction (SNCR) √\* ICI Boilers-Liquid Waste Selective Catalytic Χ 80% 1,480 1,480 1,910 Reduction (SCR) ICI Boilers-Liquid Waste-Low NOx Burner √\* 50% 400 Small Sources ICI Boilers-Liquid Waste-Low NOx Burner + Flue √\* 60% 1.120 1.120 1.080 Small Sources Gas Recirculation ICI Boilers-Liquid Waste-Selective Non-Catalytic √\* Х 50% 1.940 2,580 2,580 **Small Sources** Reduction (SNCR) ICI Boilers-LPG-Small √\* Χ 80% Selective Catalytic 2,780 3,570 2,780 Reduction (SCR) Sources ICI Boilers-LPG-Small Low NOx Burner + Flue √\* 60% 1.090 2.490 2.490 Sources Gas Recirculation ICI Boilers-LPG-Small Selective Non-Catalytic √\* Χ 50% 3,470 4,640 4,640 Sources Reduction (SNCR) √\* ICI Boilers—LPG—Small Low NOx Burner 50% 1,180 Sources ICI Boilers-MSW/Stoker-Selective Non-Catalytic √\* Χ 55% 1,690 Small Sources Reduction (SNCR) Urea Based √\* ICI Boilers-Natural Gas-Selective Non-Catalytic Х 50% 1.570 Large Sources Reduction (SNCR) ICI Boilers-Natural Gas-Low NOx Burner + Flue √\* 60% 2.470 2.560 2.560 Gas Recirculation Small Sources ICI Boilers-Natural Gas-Oxygen Trim + Water √\* 65% 680 **Small Sources** Injection √\* ICI Boilers-Natural Gas-Selective Catalytic Χ 80% 2,230 2,230 2,860 Small Sources Reduction (SCR)

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Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ Source Category Control Measure Name  $PM_{10}$ EC OC  $NO_x$ VOC  $S0_2$  $NH_3$ CO Hg Low Typical High Low Typical High ICI Boilers-Natural Gas-Low NOx Burner √\* 50% 820 **Small Sources** ICI Boilers-Natural Gas-Selective Non-Catalytic √\* Х 50% 2.900 3.870 3.870 Reduction (SNCR) Small Sources ICI Boilers-Process Gas-Oxygen Trim + Water √\* 65% 680 **Small Sources** Injection ICI Boilers-Process Gas-√\* Low NOx Burner 50% 820 Small Sources √\* 2,560 ICI Boilers-Process Gas-Low NOx Burner + Flue 60% 2,470 2,560 **Small Sources** Gas Recirculation √\* ICI Boilers-Process Gas-Selective Catalytic Χ 80% 2,230 2,230 2,860 Small Sources Reduction (SCR) ICI Boilers-Residual Oil-Selective Non-Catalytic √\* Х 50% 1.050 Large Sources Reduction (SNCR) ICI Boilers-Residual Oil-Selective Catalytic Х 80% 1.480 1.480 1.910 Small Sources Reduction (SCR) ICI Boilers-Residual Oil-Low NOx Burner √\* 50% 400 **Small Sources** ICI Boilers-Residual Oil-√\* Selective Non-Catalytic Χ 50% 1,940 2,580 2,580 Small Sources Reduction (SNCR) ICI Boilers-Residual Oil-Low NOx Burner + Flue √\* 60% 1.120 1.120 1.080 Small Sources Gas Recirculation ICI Boilers-Selective Non-Catalytic √\* Χ 55% 1,190 Reduction (SNCR) Úrea Wood/Bark/Stoker-Large Sources Based √\* ICI Boilers-Selective Non-Catalytic Χ 55% 1,440 Wood/Bark/Stoker-Small Reduction (SNCR) Urea Sources Based RACT to 25 tpy (LNB) √\* 21% 1.350 Industrial Coal Combustion √\* 21% 1.350 Industrial Coal Combustion RACT to 50 tpy (LNB) √\* **Industrial Incinerators** Selective Non-Catalytic Χ 45% 1,130 Reduction (SNCR) Industrial Natural Gas RACT to 50 tpy (LNB) √\* 770 31% Combustion Industrial Natural Gas RACT to 25 tpy (LNB) √\* 31% 770 Combustion √\* Industrial Oil Combustion RACT to 50 tpy (LNB) 36% 1,180 √\* Industrial Oil Combustion RACT to 25 tpy (LNB) 36% 1,180

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Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$  $PM_{10}$ EC NΟ<sub>x</sub> VOC  $S0_2$ Hg Source Category Control Measure Name OC  $NH_3$ CO Low Typical High Low Typical High √\* In-Proc; Process Gas; Coke Low NOx Burner + Flue 55% 1,430 3,190 3,190 Oven/Blast Ovens Gas Recirculation In-Process Fuel Use-Selective Non-Catalytic √\* Χ 40% 1,260 Reduction (SNCR) Bituminous Coal—Small Sources In-Process Fuel Use; √\* Low NOx Burner 50% 2,200 Natural Gas—Small Sources In-Process Fuel Use; Low NOx Burner √\* 37% 2,520 Residual Oil—Small Sources √\* In-Process; Bituminous Selective Non-Catalytic Χ 50% 770 Coal; Cement Kilns Reduction (SNCR) Urea Based In-Process: Bituminous Selective Non-Catalytic √\* Х 50% 770 Reduction (SNCR) Urea Coal: Lime Kilns Based √\* In-Process; Process Gas; Low NOx Burner 50% 2,200 Coke Oven Gas Internal Combustion L-E (Medium Speed) √\* 87% 380 Engines—Gas Internal Combustion √\* Ignition Retard 20% 550 Engines—Gas—Large Sources √\* 30% 150 460 Internal Combustion Air/Fuel + Ignition Retard 460 Engines—Gas—Large Sources √\* Internal Combustion Air/Fuel Ratio Adjustment 20% 380 Engines—Gas—Large Sources Internal Combustion √\* Air/Fuel + Ignition Retard 30% 270 1.440 1.440 Engines—Gas—Small Sources Internal Combustion Air/Fuel Ratio Adjustment √\* 20% 1,570 Engines—Gas—Small Sources Internal Combustion Ignition Retard √\* 20% 1.020 Engines—Gas—Small Sources

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Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant 1999 dollars) (% reduction)  $PM_{2.5}$  $PM_{10}$ EC VOC  $S0_2$ Source Category Control Measure Name OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High Internal Combustion Selective Catalytic √\* Χ 80% 2,340 Engines-Oil-Small Reduction (SCR) Sources Internal Combustion √\* 25% 770 Ignition Retard Engines-Oil-Small Sources Iron & Steel Mills-Low NOx Burner (LNB) + √\* Χ 80% 1,320 1,720 1,720 Annealing SCR Iron & Steel Mills-Low NOx Burner + Flue √\* 60% 250 750 750 Gas Recirculation Annealing √\* Iron & Steel Mills-Selective Non-Catalytic Х 60% 1,640 Annealing Reduction (SNCR) √\* Iron & Steel Mills-Low NOx Burner 50% 570 Annealing Iron & Steel Mills-Selective Catalytic √\* Χ 85% 3,830 Annealing—Small Sources Reduction (SCR) 4,080 Iron & Steel Mills-Low NOx Burner (LNB) + √\* Χ 90% 3,720 4,080 Annealing-Small Sources Selective Catalytic Reduction (SCR) Iron & Steel Mills-Low NOx Burner + Flue √\* 60% 190 580 580 Gas Recirculation Galvanizing √\* Iron & Steel Mills-Low NOx Burner 50% 490 Galvanizing √\* Iron & Steel Mills-Low NOx Burner + Flue 77% 150 380 380 Reheating Gas Recirculation Iron & Steel Mills-Low NOx Burner √\* 66% 300 Reheating √\* 13% 1.320 Iron & Steel Mills-Low Excess Air (LEA) Reheating Iron Production; Blast Low NOx Burner + Flue √\* 77% 380 Furnaces; Blast Heating Gas Recirculation Stoves √\* Lime Kilns 30% Low NOx Burner 560 √\* 30% 460 Lime Kilns Mid-Kiln Firing √\* Selective Non-Catalytic Χ 45% 4,510 Medical Waste Incinerators Reduction (SNCR) Selective Non-Catalytic √\* Municipal Waste Χ 45% 1,130 Combustors Reduction (SNCR)

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Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars) VOC Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ EC OC  $NO_x$  $S0_2$  $NH_3$ CO Hq Low Typical High Low Typical High Natural Gas Production; Selective Catalytic Χ 20% 1,651 Compressors—Small Reduction (SCR) Sources Nitric Acid Manufacturing-√\* 95% Extended Absorption 480 **Small Sources** Nitric Acid Manufacturing-Non-Selective Catalytic √\* Χ 98% 510 710 550 **Small Sources** Reduction (NSCR) √\* Nitric Acid Manufacturing-Selective Catalytic Χ 97% 590 Small Sources Reduction (SCR) √\* Open Burning Episodic Ban (Daily Only) 100% N/A √\* Plastics Prod-Specific; Low NOx Burner + Flue 55% 1,430 3,190 3,190 Gas Recirculation (ABS)—Small Sources Process Heaters—Distillate Selective Catalytic √\* Х 75% 9.230 Oil—Small Sources Reduction (SCR) Process Heaters—Distillate Low NOx Burner -Χ 78% 3.620 3.620 3.830 Oil—Small Sources Selective Non-Catalytic Reduction (SNCR) √\* Process Heaters—Distillate Ultra Low NOx Burner 74% 2,140 Oil-Small Sources Process Heaters—Distillate Selective Non-Catalytic √\* Χ 60% 3,180 Oil—Small Sources Reduction (SNCR) Process Heaters—Distillate Low NOx Burner + Flue √\* 48% 4.250 4.250 19.54 Oil—Small Sources Gas Recirculation 0 Process Heaters—Distillate Low NOx Burner √\* 45% 3,470 Oil—Small Sources √\* Process Heaters—Distillate Low NOx Burner (LNB) + Χ 92% 9,120 9,120 15,35 Oil—Small Sources Selective Catalytic 0 Reduction (SCR) Process Heaters-LPG-√\* Selective Non-Catalytic Х 60% 3.180 Small Sources Reduction (SNCR) Process Heaters-LPG-Low NOx Burner (LNB) + 15.35 √\* Х 92% 9.120 9.120 Small Sources Selective Catalytic 0 Reduction (SCR) Process Heaters—LPG— Low NOx Burner (LNB) + √\* Χ 78% 3,620 3,620 3,830 Small Sources SNCR √\* Process Heaters-LPG-Selective Catalytic Х 75% 9,230 **Small Sources** Reduction (SCR)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in  $\sqrt{-}$ pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars) Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ EC OC  $NO_x$ VOC  $S0_2$  $NH_3$ CO Hg Low Typical High Low Typical High Process Heaters-LPG-Ultra Low NOx Burner √\* 74% 2,140 **Small Sources** Process Heaters-LPG-Low NOx Burner √\* 45% 3.470 Small Sources Process Heaters-LPG-Low NOx Burner + Flue √\* 48% 4.250 19,54 4,250 **Small Sources** Gas Recirculation 0 √\* Process Heaters—Natural Ultra Low NOx Burner 75% 1,500 Gas-Small Sources Process Heaters-Natural Low NOx Burner √\* 50% 2,200 Gas-Small Sources √\* Process Heaters-Natural Low NOx Burner + Flue 55% 3,190 15,58 3,190 Gas-Small Sources Gas Recirculation 0 Process Heaters-Natural Selective Non-Catalytic √\* Х 60% 2.850 Gas-Small Sources Reduction (SNCR) Process Heaters-Natural Selective Catalytic Х 75% 12.040 Gas-Small Sources Reduction (SCR) Process Heaters-Natural Low NOx Burner (LNB) + √\* Х 88% 11,56 11,560 27,91 Gas-Small Sources Selective Catalytic 0 0 Reduction (SCR) Process Heaters-Natural Low NOx Burner (LNB) + √\* Χ 80% 3,520 3,520 6,600 Gas-Small Sources SNCR Process Heaters-Other Low NOx Burner (LNB) + √\* Х 75% 2.230 2.300 2.860 Fuel-Small Sources SNCR Selective Catalytic √\* 75% Process Heaters—Other Χ 5,350 Fuel-Small Sources Reduction (SCR) √\* Process Heaters—Other Ultra Low NOx Burner 73% 1,290 Fuel-Small Sources Process Heaters—Other Selective Non-Catalytic √\* Χ 60% 1,930 Fuel-Small Sources Reduction (SNCR) Process Heaters-Other Low NOx Burner √\* 37% 2.520 Fuel-Small Sources Process Heaters-Other Low NOx Burner + Flue √\* 34% 3,490 Fuel-Small Sources Gas Recirculation Process Heaters—Other Low NOx Burner (LNB) + √\* Χ 91% 5.420 5,420 7.680 Fuel—Small Sources Selective Catalytic Reduction (SCR) Process Heaters—Process Low NOx Burner (LNB) + √\* Χ 88% 11,56 11,560 27,91 Gas-Small Sources Selective Catalytic 0 Reduction (SCR)

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Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars) Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ EC OC  $NO_x$ VOC  $S0_2$  $NH_3$ CO Hg Low Typical High Low Typical High Process Heaters—Process Low NOx Burner + Flue √\* 55% 1,430 3,190 3,190 Gas-Small Sources Gas Recirculation Process Heaters—Process Selective Non-Catalytic √\* Х 60% 2.850 Gas-Small Sources Reduction (SNCR) Process Heaters—Process Ultra Low NOx Burner √\* 75% 1.500 Gas-Small Sources √\* Process Heaters—Process Selective Catalytic Χ 75% 12,040 Gas-Small Sources Reduction (SCR) Process Heaters—Process Low NOx Burner (LNB) √\* Χ 80% 6,600 3,520 3,520 Gas-Small Sources +Selective Reduction SNCR Process Heaters—Process √\* Low NOx Burner 50% 2,200 Gas-Small Sources Process Heaters—Residual Low NOx Burner (LNB) + √\* Х 91% 5.420 5.420 7.680 Oil—Small Sources Selective Catalytic Reduction (SCR) Process Heaters—Residual Selective Catalytic √\* Χ 75% 5,350 Oil—Small Sources Reduction (SCR) Process Heaters—Residual Low NOx Burner (LNB) + √\* Χ 75% 2.230 2.300 2.860 Oil-Small Sources SCR Process Heaters—Residual Ultra Low NOx Burner √\* 73% 1,290 Oil—Small Sources Process Heaters—Residual Selective Non-Catalytic Х 60% 1,930 Oil—Small Sources Reduction (SNCR) √\* Process Heaters—Residual Low NOx Burner 37% 2,520 Oil—Small Sources Process Heaters—Residual Low NOx Burner + Flue √\* 34% 3,490 Oil—Small Sources Gas Recirculation Residential Natural Gas Water Heater √\* 7% N/A Replacement Residential Natural Gas Water Heater + LNB √\* 7% 1.230 Space Heaters Rich-Burn Stationary Non-selective catalytic √\* 90% 342 Reciprocating Internal reduction Combustion Engines √\* Rich-Burn Stationary Non-selective catalytic 90% 342 Reciprocating Internal reduction Combustion Engines

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in  $\sqrt{-}$ pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars) Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ EC OC  $NO_x$ VOC  $S0_2$  $NH_3$ CO Hg Low Typical High Low Typical High Rich-Burn Stationary Non-selective catalytic 90% 342 Reciprocating Internal reduction (NSCR) Combustion Engines (RICE) Sand/Gravel; Dryer—Small Low NOx Burner + Flue √\* 55% 3,190 1,430 3,190 Sources Gas Recirculation Secondary Aluminum Low NOx Burner √\* 50% 570 Production; Smelting Furnaces Solid Waste Disposal; √\* 45% 1,130 Selective Non-Catalytic Χ Government; Other Reduction (SNCR) √\* Space Heaters—Distillate Low NOx Burner 50% 1,180 Oil—Small Sources Space Heaters—Distillate Selective Non-Catalytic √\* Χ 50% 3,470 4,640 4,640 Oil—Small Sources Reduction (SNCR) Space Heaters—Distillate Selective Catalytic √\* Χ 80% 2,780 2,780 3,570 Oil-Small Sources Reduction (SCR) Space Heaters—Distillate Low NOx Burner + Flue √\* 60% 1,090 2,490 2,490 Oil—Small Sources Gas Recirculation Space Heaters-Natural Selective Non-Catalytic √\* 50% 2.900 3.870 3.870 Х Gas-Small Sources Reduction (SNCR) Space Heaters—Natural Selective Catalytic √\* Χ 80% 2,230 2,230 2,860 Gas—Small Sources Reduction (SCR) Space Heaters-Natural Oxygen Trim + Water 65% 680 Gas-Small Sources Injection √\* Space Heaters-Natural Low NOx Burner + Flue 60% 2,470 2,560 2,560 Gas—Small Sources Gas Recirculation Space Heaters-Natural Low NOx Burner √\* 50% 820 Gas-Small Sources Starch Manufacturing; Low NOx Burner + Flue √\* 55% 1.430 3.190 3.190 Combined Operation— Gas Recirculation Small Sources √\* Steel Foundries; Heat Low NOx Burner 50% 570 Treating √\* Steel Production; Soaking Low NOx Burner + Flue 60% 250 750 750 Pits Gas Recirculation √\* Sulfate Pulping—Recovery Low NOx Burner + Flue 60% 2,470 2,560 2,560 Furnaces—Small Sources Gas Recirculation Sulfate Pulping—Recovery Selective Catalytic √\* Χ 80% 2,230 2,230 2,860 Furnaces—Small Sources Reduction (SCR)

(continued)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ EC VOC  $S0_2$ Source Category Control Measure Name  $PM_{10}$ OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High √\* Sulfate Pulping—Recovery Low NOx Burner 50% 820 Furnaces—Small Sources Sulfate Pulping—Recovery Selective Non-Catalytic √\* Χ 50% 2.900 3.870 3.870 Furnaces—Small Sources Reduction (SNCR) Sulfate Pulping—Recovery Oxygen Trim + Water √\* 65% 680 Furnaces—Small Sources Injection Surface Coat Oper; Coating √\* Low NOx Burner Х 50% 2,200 Oven Htr; Nat Gas-Small Sources √\*  $\sqrt{}$ Agricultural Burning Bale Stack/Propane  $\sqrt{}$ 49% 63% 63% 2.591 Burning Soil Conservation Plans  $\sqrt{}$  $\sqrt{}$  $\sqrt{}$ 11.7% 138 Agricultural Tilling √\* √\* CEM Upgrade and Asphalt Manufacture 7.7% 5.200 Increased Monitoring Frequency of PM Controls Asphalt Manufacture Increased Monitoring √\* √\*  $\sqrt{}$  $\sqrt{}$ 6.5% 620 Frequency (IMF) of PM Controls √\* Asphalt Manufacture Paper/Nonwoven Filters -V  $\sqrt{}$ 99% 85 147 256 Cartridge Collector Type Fabric Filter (Mech.  $\sqrt{}$ √\*  $\sqrt{}$ V 99% 37 126 303 Asphalt Manufacture Shaker Type) Fabric Filter (Reverse-Air √\* Asphalt Manufacture √ V V 99% 53 148 337 Cleaned Type) Fabric Filter (Pulse Jet  $\sqrt{}$ √\*  $\sqrt{}$ V Asphalt Manufacture 99% 42 117 266 Type) Beef Cattle Feedlots Watering √\*  $\sqrt{}$ 50% 307 Chemical Manufacture Increased Monitoring √\* √\*  $\sqrt{}$ 6.5% 620 Frequency (IMF) of PM Controls CEM Upgrade and √\* √\* 7.7% Chemical Manufacture 5.200 Increased Monitoring Frequency of PM Controls Wet ESP - Wire Plate  $\sqrt{}$ √\* V V Chemical Manufacture 99% 55 220 550 Type √\* √\* Commercial Institutional CEM Upgrade and 7.7% 5,200 Boilers-Coal Increased Monitoring Frequency of PM Controls

(continued)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ VOC  $S0_2$ Source Category Control Measure Name  $PM_{10}$ EC OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High Increased Monitoring Commercial Institutional √\* V 6.5% 620 Boilers-Coal Frequency (IMF) of PM Controls Commercial Institutional Fabric Filter (Pulse Jet V √\*  $\sqrt{}$ V 99% 42 117 266 Boilers—Coal Type) Fabric Filter (Reverse-Air Commercial Institutional V √\* V V 99% 53 337 148 Boilers-Coal Cleaned Type) Dry ESP-Wire Plate Type  $\sqrt{}$ √\*  $\sqrt{}$ Commercial Institutional  $\sqrt{}$ 98% 40 250 110 Boilers—Coal √\* √\* Commercial Institutional Increased Monitoring V 6.5% 620 Boilers-Natural Gas Frequency (IMF) of PM Controls √\* √\* Commercial Institutional Increased Monitoring V 6.5% 620 Boilers-Oil Frequency (IMF) of PM Controls √\* Commercial Institutional CEM Upgrade and √\* 7.7% 5,200 Boilers-Oil Increased Monitoring Frequency of PM Controls Commercial Institutional Dry ESP-Wire Plate Type V √\*  $\sqrt{}$  $\sqrt{}$ 98% 40 250 110 Boilers-Oil √\* √\* Commercial Institutional Increased Monitoring 6.5% 620 Boilers-Solid Waste Frequency (IMF) of PM Controls Commercial Institutional CEM Upgrade and √\* √\* 7.7% 5,200 Boilers-Solid Waste Increased Monitoring Frequency of PM Controls CEM Upgrade and √\* √\* Commercial Institutional 7.7% 5,200 Boilers-Wood Increased Monitoring Frequency of PM Controls √\* √\* Increased Monitoring Commercial Institutional V 6.5% 620 Boilers-Wood Frequency (IMF) of PM Controls Commercial Institutional Dry ESP-Wire Plate Type  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 90% 40 110 250 Boilers-Wood/Bark Commercial Institutional Fabric Filter (Reverse-Air V √\* V 80% 53 337 V 148 Boilers-Wood/Bark Cleaned Type)  $\sqrt{}$ √\*  $\sqrt{}$ Commercial Institutional Fabric Filter (Pulse Jet  $\sqrt{}$ 80% 42 266 117 Boilers—Wood/Bark Type)  $\sqrt{}$ √\*  $\sqrt{}$ 62.5% 3.600 Construction Activities **Dust Control Plan** 

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Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant 1999 dollars) (% reduction)  $PM_{2.5}$  $PM_{10}$ EC  $NO_x$ VOC  $S0_2$ Source Category Control Measure Name OC  $NH_3$ CO Hg Low Typical High Low Typical High Conveyorized Charbroilers Catalytic Oxidizer √\* √\* V V 80% 83% 90% 2,966 √\* √\* Conveyorized Charbroilers **ESP** for Commercial 99% 99% 99% 7,000 Cooking Fabricated Metal Paper/Nonwoven Filters -√\*  $\sqrt{}$ V 99% 85 142 256 Products-Abrasive Cartridge Collector Type Blasting Fabricated Metal  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 99% 256 Paper/Nonwoven Filters -85 142 Products—Welding Cartridge Collector Type √\* √\* Ferrous Metals Increased Monitoring V 6.5% 620 Frequency (IMF) of PM Processing—Coke Controls √\* √\* CEM Upgrade and 7.7% 5,200 Ferrous Metals Increased Monitoring Processing—Coke Frequency of PM Controls Ferrous Metals Venturi Scrubber √\*  $\sqrt{}$  $\sqrt{}$ 93% 75 751 2,100 Processing—Coke √\* Ferrous Metals Fabric Filter (Reverse-Air V  $\sqrt{}$  $\sqrt{}$ 99% 53 148 337 Processing—Coke Cleaned Type) √\* Ferrous Metals Fabric Filter (Mech.  $\sqrt{}$  $\sqrt{}$ 99% 37 126 303 Processing—Coke Shaker Type) Ferrous Metals Increased Monitoring √\* √\*  $\sqrt{}$  $\sqrt{}$ 6.5% 620 Frequency (IMF) of PM Processing—Ferroalloy Controls Production CEM Upgrade and √\* √\* Ferrous Metals 7.7% 5,200 Processing—Ferroalloy Increased Monitoring Production Frequency of PM Controls Ferrous Metals Dry ESP-Wire Plate Type  $\sqrt{}$ √\* V 98% 40 250 110 Processing—Ferroalloy Production  $\sqrt{}$ √\*  $\sqrt{}$ Ferrous Metals Fabric Filter (Mech. 99% 37 126 303 Processing—Ferroalloy Shaker Type) Production Ferrous Metals Fabric Filter (Reverse-Air √\*  $\sqrt{}$ V 99% 53 148 337 Processing—Ferroalloy Cleaned Type) Production Ferrous Metals Fabric Filter (Mech.  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 99% 37 126 303 Processing—Gray Iron Shaker Type) Foundries

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$  $PM_{10}$ EC  $NO_x$ VOC  $S0_2$ Source Category Control Measure Name OC  $NH_3$ CO Hg Low Typical High Low Typical High Increased Monitoring Ferrous Metals √\* V 6.5% 620 Processing—Gray Iron Frequency (IMF) of PM Foundries Controls Ferrous Metals CEM Upgrade and √\* √\* 7.7% 5,200 Processing—Gray Iron Increased Monitoring Foundries Frequency of PM Controls √\* Ferrous Metals Impingement-Plate V V V 64% 46 431 1,200 Processing—Gray Iron Scrubber Foundries √\* Venturi Scrubber  $\sqrt{}$  $\sqrt{}$ 94% 76 751 2,100 Ferrous Metals Processing—Gray Iron Foundries √\* Ferrous Metals Fabric Filter (Reverse-Air V 99% 53 148 337 Processing—Gray Iron Cleaned Type) Foundries CEM Upgrade and √\* √\* 7.7% Ferrous Metals 5,200 Processing-Iron & Steel Increased Monitoring Frequency of PM Controls Production √\* Ferrous Metals Increased Monitoring 6.5% 620 Processing—Iron & Steel Frequency (IMF) of PM Production Controls Ferrous Metals Sinter Cooler √\* V V 99% 5,000 Processing—Iron and Steel Production √\*  $\sqrt{}$  $\sqrt{}$ 85% Ferrous Metals Capture Hood Vented to a N/A Processing—Iron and Steel Baghouse Production √\* Ferrous Metals Secondary Capture and  $\sqrt{}$ V V 85% N/A Processing—Iron and Steel Control System Production  $\sqrt{}$ √\*  $\sqrt{}$ Ferrous Metals Fabric Filter (Mech. 99% 37 126 303 Processing—Iron and Steel Shaker Type) Production Ferrous Metals Fabric Filter (Pulse Jet V √\*  $\sqrt{}$ 99% 42 117 266 Processing—Iron and Steel Type) Production Ferrous Metals Wet ESP - Wire Plate V √\* V V 99% 55 220 550 Processing—Iron and Steel Type Production

(continued)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$  $PM_{10}$ EC  $NO_x$ VOC  $S0_2$ Source Category Control Measure Name OC  $NH_3$ CO Hg Low Typical High Low Typical High Ferrous Metals Dry ESP-Wire Plate Type √\* V 98% 40 110 250 Processing-Iron and Steel Production Ferrous Metals  $\sqrt{}$ √\* V 73% 76 751 2,100 Venturi Scrubber Processing—Iron and Steel Production √\* Ferrous Metals Fabric Filter (Reverse-Air V V V 99% 53 148 337 Processing—Iron and Steel Cleaned Type) Production Increased Monitoring √\* √\* Ferrous Metals  $\sqrt{}$ 6.5% 620 Frequency (IMF) of PM Processing—Other Controls √\* √\* Ferrous Metals CEM Upgrade and 7.7% 5,200 Increased Monitoring Processing—Other Frequency of PM Controls CEM Upgrade and √\* √\* 7.7% Ferrous Metals 5.200 Processing—Steel Increased Monitoring Frequency of PM Controls Foundries √\* √\* Ferrous Metals Increased Monitoring 6.5% 620 Processing—Steel Frequency (IMF) of PM Foundries Controls Ferrous Metals Venturi Scrubber V √\* V 73% 76 751 2,100 Processing—Steel Foundries Fabric Filter (Reverse-Air  $\sqrt{}$ √\*  $\sqrt{}$ 337 Ferrous Metals 99% 53 148 Processing—Steel Cleaned Type) Foundries Fabric Filter (Pulse Jet √\* Ferrous Metals V V V 99% 42 117 266 Processing—Steel Type) Foundries  $\sqrt{}$ √\*  $\sqrt{}$ Ferrous Metals Fabric Filter (Mech. 99% 37 126 303 Processing—Steel Shaker Type) Foundries Grain Milling Fabric Filter (Pulse Jet 1 √\*  $\sqrt{}$ 99% 42 117 266 Type) Grain Milling Paper/Nonwoven Filters - $\sqrt{}$ √\*  $\sqrt{}$ V 99% 85 142 256 Cartridge Collector Type Fabric Filter (Reverse-Air √\* Grain Milling 99% 53 148 337 Cleaned Type)

(continued)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ EC VOC  $S0_2$ Source Category Control Measure Name  $PM_{10}$ OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High Industrial Boilers-Coal CEM Upgrade and √\* 7.7% 5,200 Increased Monitoring Frequency of PM Controls Increased Monitoring √\* √\* V Industrial Boilers—Coal 6.5% 620 Frequency (IMF) of PM Controls Industrial Boilers-Coal Venturi Scrubber V √\* V V 82% 76 2,100 751 Fabric Filter (Reverse-Air  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 99% 53 Industrial Boilers—Coal 148 337 Cleaned Type) Dry ESP-Wire Plate Type  $\sqrt{}$ √\* 98% Industrial Boilers—Coal V V 40 110 250 √\* Fabric Filter (Pulse Jet  $\sqrt{}$  $\sqrt{}$ Industrial Boilers-Coal 99% 42 117 266 Type) √\* Industrial Boilers-Coke Increased Monitoring √\* V 6.5% 620 Frequency (IMF) of PM Controls Industrial Boilers-Coke CEM Upgrade and √\* √\* 7.7% 5,200 Increased Monitoring Frequency of PM Controls 1 √\* Industrial Boilers-Liquid Dry ESP-Wire Plate Type  $\sqrt{}$ 98% 40 110 250 Waste Industrial Boilers-Oil CEM Upgrade and √\* √\* 7.7% 5,200 Increased Monitoring Frequency of PM Controls Increased Monitoring √\* √\* Industrial Boilers-Oil 6.5% 620 Frequency (IMF) of PM Controls Industrial Boilers-Oil Dry ESP-Wire Plate Type  $\sqrt{}$ √\*  $\sqrt{}$ 98% 250  $\sqrt{}$ 40 110 Venturi Scrubber  $\sqrt{}$ √\*  $\sqrt{}$ 92% 76 751 Industrial Boilers-Oil 2.100 √\* √\*  $\sqrt{}$  $\sqrt{}$ 6.5% 620 Industrial Boilers—Solid Increased Monitoring Frequency (IMF) of PM Waste Controls √\* √\* Industrial Boilers—Solid CEM Upgrade and 7.7% 5,200 Increased Monitoring Waste Frequency of PM Controls Industrial Boilers-Wood CEM Upgrade and √\* √\* 7.7% 5.200 Increased Monitoring Frequency of PM Controls

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in  $\sqrt{-}$ pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars) VOC Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ EC OC  $NO_x$  $S0_2$  $NH_3$ CO Hq Low Typical High Low Typical High Increased Monitoring Industrial Boilers-Wood √\* √\* V 6.5% 620 Frequency (IMF) of PM Controls  $\sqrt{}$ √\* V 93% 2,100 Industrial Boilers-Wood Venturi Scrubber 76 751 Industrial Boilers-Wood Fabric Filter (Reverse-Air V √\* V V 99% 53 337 148 Cleaned Type) Dry ESP-Wire Plate Type  $\sqrt{}$ √\*  $\sqrt{}$ 98% Industrial Boilers-Wood  $\sqrt{}$ 40 250 110 Fabric Filter (Pulse Jet √\* V Industrial Boilers-Wood 99% 42 117 266 Type) √\* √\*  $\sqrt{}$ Mineral Products—Cement Increased Monitoring 6.5% 620 Manufacture Frequency (IMF) of PM Controls √\* Mineral Products—Cement CEM Upgrade and √\* 7.7% 5.200 Manufacture Increased Monitoring Frequency of PM Controls Mineral Products—Cement Fabric Filter (Mech.  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 99% 37 126 303 Manufacture Shaker Type) √\* Mineral Products—Cement Fabric Filter (Pulse Jet V V V 99% 42 117 266 Manufacture Type) Mineral Products—Cement Dry ESP-Wire Plate Type  $\sqrt{}$ √\*  $\sqrt{}$ V 98% 40 110 250 Manufacture √\* Mineral Products—Cement Paper/Nonwoven Filters -V V 99% 85 142 256 Manufacture Cartridge Collector Type Mineral Products—Cement Fabric Filter (Reverse-Air  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 99% 53 337 148 Manufacture Cleaned Type) √\* √\* Mineral Products—Coal Increased Monitoring 6.5% 620 Cleaning Frequency (IMF) of PM Controls √\* √\* Mineral Products—Coal CEM Upgrade and 7.7% 5.200 Increased Monitoring Cleaning Frequency of PM Controls √\* Mineral Products—Coal Venturi Scrubber V 99% 76 2,100 751 Cleaning √\* V Mineral Products—Coal Paper/Nonwoven Filters -V 99% 85 142 256 Cartridge Collector Type Cleaning √\* Mineral Products—Coal Fabric Filter (Reverse-Air 99% 53 148 337 Cleaned Type) Cleaning Mineral Products—Coal Fabric Filter (Pulse Jet V √\* V V 99% 42 117 266 Cleaning Type)

(continued)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ Source Category Control Measure Name  $PM_{10}$ EC OC  $NO_x$ VOC  $S0_2$  $NH_3$ CO Hg Low Typical High Low Typical High Mineral Products-Coal Fabric Filter (Mech. V √\* V V 99% 37 126 303 Cleaning Shaker Type) Mineral Products-Other Increased Monitoring √\* √\* V 6.5% 620 Frequency (IMF) of PM Controls √\* Mineral Products-Other CEM Upgrade and √\* 7.7% 5,200 Increased Monitoring Frequency of PM Controls Mineral Products-Other Fabric Filter (Pulse Jet V √\*  $\sqrt{}$  $\sqrt{}$ 99% 42 266 117 Type)  $\sqrt{}$ √\* Mineral Products-Other Wet ESP - Wire Plate V V 99% 55 220 550 Type √\* Mineral Products-Other Paper/Nonwoven Filters -√  $\sqrt{}$  $\sqrt{}$ 99% 85 145 256 Cartridge Collector Type Mineral Products-Other Fabric Filter (Mech. √\*  $\sqrt{}$  $\sqrt{}$ 99% 37 126 303 Shaker Type) Mineral Products—Other Fabric Filter (Reverse-Air V √\*  $\sqrt{}$ V 99% 53 337 148 Cleaned Type) Mineral Products-Other Dry ESP-Wire Plate Type √\*  $\sqrt{}$ 98% 40 110 250 Mineral Products—Stone CEM Upgrade and √\* √\* 7.7% 5,200 Increased Monitoring Quarrying & Processing Frequency of PM Controls √\* Increased Monitoring √\* Mineral Products-Stone V 6.5% 620 Quarrying & Processing Frequency (IMF) of PM Controls Mineral Products—Stone Dry ESP-Wire Plate Type V √\*  $\sqrt{}$  $\sqrt{}$ 98% 40 110 250 Quarrying and Processing  $\sqrt{}$ √\*  $\sqrt{}$ 99% 37 303 Mineral Products—Stone Fabric Filter (Mech. 126 Quarrying and Processing Shaker Type) Mineral Products-Stone Fabric Filter (Reverse-Air  $\sqrt{}$ √\*  $\sqrt{}$ V 99% 53 148 337 Quarrying and Processing Cleaned Type) √\* Mineral Products—Stone Paper/Nonwoven Filters -V V 99% 85 142 256 Quarrying and Processing Cartridge Collector Type Wet ESP - Wire Plate V √\* V Mineral Products—Stone V 99% 55 220 550 Quarrying and Processing Type V √\* Mineral Products—Stone Venturi Scrubber 95% 76 751 2,100 Quarrying and Processing Mineral Products—Stone Fabric Filter (Pulse Jet V √\* V V 99% 42 117 266 Quarrying and Processing Type)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ EC NΟ<sub>x</sub> VOC  $S0_2$ Source Category Control Measure Name  $PM_{10}$ OC  $NH_3$ CO Hg Low Typical High Low Typical High Municipal Waste Dry ESP-Wire Plate Type V √\* V 98% 40 110 250 Incineration Non-Ferrous Metals Increased Monitoring √\* √\* V 6.5% 620 Frequency (IMF) of PM Processing—Aluminum Controls √\* √\* Non-Ferrous Metals CEM Upgrade and 7.7% 5,200 Processing—Aluminum Increased Monitoring Frequency of PM Controls Non-Ferrous Metals Fabric Filter (Reverse-Air  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 99% 53 148 337 Cleaned Type) Processing—Aluminum √\* Fabric Filter (Mech.  $\sqrt{}$  $\sqrt{}$ 303 Non-Ferrous Metals V 99% 37 126 Processing—Aluminum Shaker Type) Wet ESP - Wire Plate  $\sqrt{}$ √\* Non-Ferrous Metals  $\sqrt{}$  $\sqrt{}$ 99% 55 220 550 Processing—Aluminum Type Non-Ferrous Metals Dry ESP-Wire Plate Type √\*  $\sqrt{}$  $\sqrt{}$ 98% 40 110 250 Processing—Aluminum √\* Non-Ferrous Metals Increased Monitoring √\*  $\sqrt{}$ 6.5% 620 Processing—Copper Frequency (IMF) of PM Controls CEM Upgrade and √\* √\* Non-Ferrous Metals 7.7% 5.200 Increased Monitoring Processing—Copper Frequency of PM Controls Fabric Filter (Reverse-Air √\* V Non-Ferrous Metals V V 99% 53 148 337 Processing—Copper Cleaned Type) Wet ESP - Wire Plate √\* Non-Ferrous Metals V V 99% 55 220 550 Processing—Copper Type Non-Ferrous Metals Fabric Filter (Mech.  $\sqrt{}$ √\*  $\sqrt{}$ V 99% 37 303 126 Processing—Copper Shaker Type) Dry ESP-Wire Plate Type √\*  $\sqrt{}$  $\sqrt{}$ 98% 250 Non-Ferrous Metals 40 110 Processing—Copper Non-Ferrous Metals CEM Upgrade and √\* √\* 7.7% 5,200 Processing—Lead Increased Monitoring Frequency of PM Controls Increased Monitoring √\* V 6.5% 620 Non-Ferrous Metals Processing—Lead Frequency (IMF) of PM Controls Non-Ferrous Metals Fabric Filter (Reverse-Air √\* V 99% 53 148 337 Processing—Lead Cleaned Type)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ EC VOC  $S0_2$ Source Category Control Measure Name  $PM_{10}$ OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High Non-Ferrous Metals Wet ESP - Wire Plate √\* V V 99% 55 220 550 Processing—Lead Type Non-Ferrous Metals Dry ESP-Wire Plate Type V √\* V 98% 40 110 250 Processing—Lead Non-Ferrous Metals Fabric Filter (Mech. V √\* V V 99% 37 303 126 Processing—Lead Shaker Type) √\* √\*  $\sqrt{}$ Non-Ferrous Metals Increased Monitoring  $\sqrt{}$ 6.5% 620 Frequency (IMF) of PM Processing—Other Controls √\* √\* CEM Upgrade and 7.7% Non-Ferrous Metals 5.200 Processing—Other Increased Monitoring Frequency of PM Controls V √\* Non-Ferrous Metals Fabric Filter (Mech. V  $\sqrt{}$ 99% 37 1,260 303 Processing—Other Shaker Type) Non-Ferrous Metals Fabric Filter (Reverse-Air √\*  $\sqrt{}$  $\sqrt{}$ 99% 53 148 337 Processing—Other Cleaned Type) Non-Ferrous Metals Wet ESP - Wire Plate  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 99% 55 220 550 Processing—Other Type √\* Non-Ferrous Metals Dry ESP-Wire Plate Type  $\sqrt{}$  $\sqrt{}$ 98% 40 250 110 Processing—Other Non-Ferrous Metals CEM Upgrade and √\* √\* 7.7% 5,200 Processing—Zinc Increased Monitoring Frequency of PM Controls Increased Monitoring √\* √\* Non-Ferrous Metals 6.5% 620 Frequency (IMF) of PM Processing—Zinc Controls Fabric Filter (Mech.  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 99% 37 303 Non-Ferrous Metals 126 Processing—Zinc Shaker Type) Dry ESP-Wire Plate Type √\*  $\sqrt{}$ 98% 250 Non-Ferrous Metals V 40 110 Processing—Zinc Non-Ferrous Metals Fabric Filter (Reverse-Air V √\* V V 99% 53 148 337 Processing—Zinc Cleaned Type) √\* Non-Ferrous Metals Wet ESP - Wire Plate 99% 55 220 550 Processing—Zinc Type Paved Roads Vacuum Sweeping  $\sqrt{}$ √\*  $\sqrt{}$  $\sqrt{}$ 50.5% 485 √\* V Prescribed Burning Increase Fuel Moisture 50% 2,617 √\* √\*  $\sqrt{}$ Residential Home Heating Switch to Low Sulfur Fuel 75% 2,350

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in (% reduction) √=pollutant reduction, X= pollutant increase, \*=major pollutant 1999 dollars) Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ EC OC  $NO_x$ VOC  $S0_2$  $NH_3$ CO Hg Low Typical High Low Typical High Residential Wood Education and Advisory V √\* V V 50% 1,320 Combustion Program Residential Wood Stoves NSPS compliant Wood √\* √\* 98% 2.000 Stoves **Unpaved Roads** Hot Asphalt Paving V √\* V V 67.5% 537 **Unpaved Roads** Chemical Stabilization V √\*  $\sqrt{}$ 37.5% 2,753 Wood Pulp & Paper Wet ESP - Wire Plate √\* V 99% 550 55 220 Type √\* Wood Pulp & Paper V  $\sqrt{}$ 98% Dry ESP-Wire Plate Type 40 110 250 90% N/A Bituminous/Subbituminous Flue Gas Desulfurization √\* Flue Gas Desulfurization √\* Bituminous/Subbituminous 90% N/A Coal Bituminous/Subbituminous Spray Dryer Absorber √\* 90% 804 1,341 1,973 Coal (Industrial Boilers) √\* Bituminous/Subbituminous In-duct Dry Sorbent 40% 1,111 1.526 2.107 Coal (Industrial Boilers) Injection Bituminous/Subbituminous Wet Flue Gas √\* 90% 1.027 1,536 1.980 Coal (Industrial Boilers) Desulfurization By-Product Coke Vacuum Carbonate Plus √\* 90% N/A Manufacturing Sulfur Recovery Plant Inorganic Chemical Flue Gas Desulfurization √\* 90% N/A Manufacture Operations √\* In-process Fuel Use-Flue Gas Desulfurization 90% N/A Bituminous Coal Lignite (Industrial Boiler) In-duct Dry Sorbent √\* 40% 1,111 1,526 2,107 Injection √\* Lignite (Industrial Boiler) Spray Dryer Absorber 90% 804 1.341 1,973 Lignite (Industrial Boiler) Wet Flue Gas √\* 90% 1.027 1.536 1.980 Desulfurization Lignite (Industrial Boilers) Flue Gas Desulfurization √\* 90% N/A Mineral Products Industry Flue Gas Desulfurization √\* 90% N/A Petroleum Industry Flue Gas Desulfurization √\* 90% N/A (FGD) Primary Lead Smelters-**Dual Absorption** √\* 99% N/A Sintering √\* Primary Metals Industry 90% Flue Gas Desulfurization N/A

(continued)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$ Source Category Control Measure Name  $PM_{10}$ EC OC  $NO_x$ VOC  $S0_2$  $NH_3$ CO Hg Low Typical High Low Typical High Primary Zinc Smelters— **Dual Absorption** √\* 99% N/A Sintering Process Heaters (Oil and Flue Gas Desulfurization √\* 90% N/A Gas Production) Pulp and Paper Industry Flue Gas Desulfurization √\* 90% N/A (Sulfate Pulping) Residual Oil (Commercial/I √\* Wet Flue Gas 90% 2,295 3,489 4,524 nstitutional Boilers) Desulfurization Residual Oil (Commercial/I Flue Gas Desulfurization √\* 90% N/A nstitutional Boilers) √\* Residual Oil (Industrial Flue Gas Desulfurization 90% N/A Boilers Secondary Metal Production Flue Gas Desulfurization √\* 90% N/A √\* 90% Steam Generating Unit-Flue Gas Desulfurization N/A Coal/Oil Sulfur Recovery Plants-Amine Scrubbing + Flue √\* 99.8% N/A Elemental Sulfur Gas Desulfurization Sulfur Recovery Plants-Amine Scrubbing + Flue √\* 99.7% N/A Elemental Sulfur Gas Desulfurization Sulfur Recovery Plants-Amine Scrubbing √\* 98.4% N/A Elemental Sulfur Sulfur Recovery Plants— √\* Amine Scrubbing 97.8% N/A Elemental Sulfur Sulfur Recovery Plants-√\* Amine Scrubbing + Flue 99.8% N/A Elemental Sulfur Gas Desulfurization Sulfur Recovery Plants— √\* Amine Scrubbing 97.1% N/A Elemental Sulfur Sulfuric Acid Plants-Increase Absorption √\* 75% N/A Contact Absorbers Efficiency from Existing to NSPS Level (99.7%) + Flue Gas Desulfurization Sulfuric Acid Plants-Increase Absorption √\* 95% N/A Contact Absorbers Efficiency from Existing to NSPS Level (99.7%) Sulfuric Acid Plants-Increase Absorption √\* 90% N/A Contact Absorbers Efficiency from Existing to NSPS Level (99.7%) + Flue Gas Desulfurization

(continued)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant 1999 dollars) (% reduction) EC VOC  $S0_2$ Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High Sulfuric Acid Plants-Increase Absorption √\* 90% N/A Contact Absorbers Efficiency from Existing to NSPS Level (99.7%) Sulfuric Acid Plants-Increase Absorption √\* 85% N/A Efficiency from Existing to Contact Absorbers NSPS Level (99.7%) Sulfuric Acid Plants-Increase Absorption √\* 95% N/A Efficiency from Existing to Contact Absorbers NSPS Level (99.7%) + Flue Gas Desulfurization √\* Sulfuric Acid Plants-Increase Absorption 75% N/A Contact Absorbers Efficiency from Existing to NSPS Lével (99.7%) Sulfuric Acid Plants-√\* 90% Flue Gas Desulfurization N/A Contact Absorbers Sulfuric Acid Plants-85% Increase Absorption √\* N/A Contact Absorbers Efficiency from Existing to NSPS Level (99.7%) + Flue Gas Desulfurization SCAQMDRule1168 √\* 73% 2.202 Adhesives—Industrial √\* 60% Aircraft Surface Coating MACT Standard 165 √\* **Architectural Coatings** OTC AIM Coating Rule 55% 6,628 √\* **Architectural Coatings** AIM Coating Federal Rule 20% 228 √\* **Architectural Coatings** South Coast Phase 1 34% 3,300 1,443 4,600 √\* **Architectural Coatings** South Coast Phase III 73% 10,059 √\* **Architectural Coatings** South Coast Phase II 47% 4,017 √\* **AREA** OTC Mobile Equipment 61% 2,534 Repair and Refinishing Rule AREA √\* OTC Mobile Equipment 61% 2.534 Repair and Refinishing Rule AREA OTC Solvent Cleaning √\* 66% 1,400 Rule √\* AREA **OTC Consumer Products** 39.2% 1,032 Rule √\* AREA OTC Mobile Equipment 61% 2,534 Repair and Refinishing Rule

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars)  $PM_{2.5}$  $PM_{10}$ EC VOC  $S0_2$ Source Category Control Measure Name OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High **AREA** OTC Mobile Equipment 61% 2,534 Repair and Refinishing Rule AREA **OTC Consumer Products** √\* 39.2% 1,032 Rule California FIP Rule (VOC Automobile Refinishing √\* 89% 7,200 content & TE) **CARB BARCT Limits** √\* Automobile Refinishing 47% 750 √\* Automobile Refinishing Federal Rule 37% 118 √\* **Bakery Products** Incineration >1 00,000 lbs 39.9% 1,470 bread Commercial Adhesives Federal Consumer √\* 25% 232 Solvents Rule Commercial Adhesives √\* 85% 2.880 CARB Long-Term Limits CARB Mid-Term Limits √\* Commercial Adhesives 55% 2.192 √\* CARB Mid-Term Limits Consumer Solvents 55% 2.192 Consumer Solvents √\* Federal Consumer 25% 232 Solvents Rule Consumer Solvents CARB Long-Term Limits √\* 85% 2,880 **Cutback Asphalt** Switch to Emulsified √\* 100% 15 Asphalts √\* 70% Electrical/Electronic Coating SCAQMD Rule 5,976 Electrical/Electronic Coating MACT Standard √\* 36% 5,000 Fabric Printing, Coating and √\* 97% Permanent Total N/A Dyeing Enclosure (PTE) Flexographic Printing Permanent Total √\* 95 9.947 Enclosure (PTE) √\* Graphic Arts Use of Low or No VOC 65% 3.500 4.800 4.150 Materials Industrial Maintenance South Coast Phase III √\* 73% 10,059 Coating √\* 20% 228 Industrial Maintenance AIM Coating Federal Rule Coating √\* 4.600 Industrial Maintenance South Coast Phase 1 34% 3.300 1.443 Coating

(continued)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Average Annual Cost Effectiveness Pollutant(s) Affected Control Efficiency (\$/ton primary pollutant in √=pollutant reduction, X= pollutant increase, \*=major pollutant (% reduction) 1999 dollars) EC VOC  $S0_2$ Source Category Control Measure Name  $PM_{2.5}$  $PM_{10}$ OC  $NO_x$  $NH_3$ CO Hg Low Typical High Low Typical High Industrial Maintenance South Coast Phase II 47% 4,017 Coating Machinery, Equipment, and SCAQMD Limits √\* 55.2% 2.027 Railroad Coating Marine Surface Coating Add-On Controls √\* 90% 8.937 (Shipbuilding) Marine Surface Coating MACT Standard √\* 24% 2,090 (Shipbuilding) √\* Metal Can Surface Coating Permanent Total 95 8,469 Operations Enclosure (PTE) √\* Metal Coil & Can Coating MACT Standard 36% 1,000 √\* Metal Coil & Can Coating Incineration 90% 8,937 √\* Metal Coil & Can Coating BAAQMD Rule 1 1 42% 2,007 Amended √\* Metal Furniture Surface Permanent Total 95 19.321 **Coating Operations** Enclosure (PTE) Metal Furniture, Appliances, SCAQMD Limits √\* 55.2% 2,027 Metal Furniture, Appliances, MACT Standard √\* 36% 1,000 Parts Miscellaneous Metal MACT Standard √\* 36% 1,000 **Products Coatings** √\* Motor Vehicle Coating 90% 8,937 Incineration √\* Motor Vehicle Coating MACT Standard 36% 118 √\* 70% Municipal Solid Waste Gas Collection 700 Landfill (SCAQMD/BAAQMD) √\* Oil and Natural Gas Equipment and 37% 317 Production Maintenance Oil and Natural Gas SCAQMD Proposed Rule √\* 14% 2.483 Production—Fugitive 1148.1 -Fugitive **Emissions Emissions** Open Top Degreasing SCAQMD 1 122 (VOC √\* 76% 1,248 content limit) √\* Open Top Degreasing Title III MACT Standard 31% -69 √\* Open Top Degreasing Airtight Degreasing 98% 9,789 System √\* Paper and other Web Permanent Total 1,503 95 **Coating Operations** Enclosure (PTE)

(continued)

Table E-1: Non-EGU Point and Area Control Measure Summary List by Source Category—Sorted alphabetically by Pollutant and Source Category (continued)

Source Category	Control Measure Name	Pollutant(s) Affected √=pollutant reduction, X= pollutant increase, *=major pollutant										Control Efficiency (% reduction)			Average Annual Cost Effectiveness (\$/ton primary pollutant in 1999 dollars)		
		PM <sub>2.5</sub>	PM <sub>10</sub>	EC	ОС	NO <sub>x</sub>	VOC	S0 <sub>2</sub>	NH <sub>3</sub>	CO	Hg	Low	Typical	High	Low	Typical	High
Paper Surface Coating	Incineration						√*						78%			4,776	
Pesticide Application	Reformulation - FIP Rule						√*						20%			9,300	
Portable Gasoline Containers	OTC Portable Gas Container Rule						√*						33%			581	
Product and Packaging Rotogravure and Screen Printing	Permanent Total Enclosure (PTE)						√*						95			12,770	
Publication Rotogravure Printing	Permanent Total Enclosure (PTE)						√*						95			2,422	
Rubber and Plastics Manufacturing	SCAQMD - Low VOC						√*						60%			1,020	
Stage II Service Stations	Low Pressure/Vacuum Relief Valve						√*						91.6%		930	1,080	1,230
Stage II Service Stations— Underground Tanks	Low Pressure/Vacuum Relief Valve						√*						73%		930	1,080	1,230
Traffic Markings	South Coast Phase III						√*						73%			1,059	
Traffic Markings	AIM Coating Federal Rule						√*						20%			228	
Traffic Markings	South Coast Phase 1						√*						34%		8,600	1,443	12,80 0
Traffic Markings	South Coast Phase II						√*						47%			4,017	
Wood Furniture Surface Coating	New CTG						√*						47%		462	967	22,10 0
Wood Furniture Surface Coating	Add-On Controls						√*					67%	75%	98%	468	20,000	22,10 0
Wood Furniture Surface Coating	MACT Standard						√*						30%			446	
Wood Product Surface Coating	Incineration						√*						86%			4,202	
Wood Product Surface Coating	SCAQMDRule1104						√*						53%			881	
Wood Product Surface Coating	MACT Standard						√*						30%			446	